UNITED STATES PATENT AND TRADEMARK OFFICE

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10/581,120	05/30/2006	Olivier Charles	5284-70PUS	5275

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EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>30 May 2006</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>11-22</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>30 May 2006</u> is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>5/30/2006</u>.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____ .

DETAILED ACTION

This office action is in response to application filed on May 30, 2006 in which claims 11-22 are presented for examination.

Status of Claims

Claims 1-22 are pending; of which claims 11, 19, and 20 are in independent form. Claims 1-10 are canceled. Claim 21 is rejected under 35 U.S.C. 101. Claims 11 and 19-22 are rejected under 35 U.S.C 102(a). Claims 12-18 are rejected under 35 U.S.C. 103(a).

Information Disclosure Statement

4.   The information disclosure statement filed May 30, 2006 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Drawings

Fig. 1, and 4-6 are objected to because no translation of the text matter has been provided with the drawings. According to Rule 49.5(d) under Regulations Under the Patent Cooperation Treaty, if any drawing contains text matter, the translation of that text matter shall be furnished either in the form of a copy of the original drawing with the translation pasted on the original text matter or in the form of a drawing executed anew.

Specification

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR
        DEVELOPMENT.
(d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
(e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A
        COMPACT DISC.
(f) BACKGROUND OF THE INVENTION.
        (1) Field of the Invention.
        (2) Description of Related Art including information disclosed under 37 CFR 1.97
        and 1.98.
(g) BRIEF SUMMARY OF THE INVENTION.
(h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
(i) DETAILED DESCRIPTION OF THE INVENTION.
(j) CLAIM OR CLAIMS (commencing on a separate sheet).
(k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
(l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence
        Listing" is required on paper if the application discloses a nucleotide or amino
        acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence
        Listing" is not submitted as an electronic document on compact disc).

Examiner identified all the necessary sections of the application, however, none of the sections were labeled appropriately.

Claim Objections

5.   Claim 11 is objected to because of the following informalities: applicant recites

"calculating a delay that is an increasing function of the bit rate of a stream coming from a

machine." However, a stream of data packets is already defined in the preamble of given claim.

The applicant is encouraged to replace "a stream coming from a machine" with "said stream

coming from a machine" to avoid potential indefiniteness issues as defined under 35 U.S.C. 112.

Appropriate correction is required.

6.   Claim 20 is objected to because of the following informalities: applicant recites "an

increasing function of said bit rate." However, there are no prior references to a bit rate of a

stream of data packets. The applicant is encouraged to replace reference to "said bit rate" with

"the bit rate of said stream of data packets."

Appropriate correction is required.

Claim Rejections - 35 USC § 112

7.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the
> subject matter which the applicant regards as his invention.

8.   Claims 11, 15, 17, and 20 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention.

With respect to claim 11, applicant claims "a method of preventing illegitimate use of a network protocol" while the remainder of the claim only addresses calculating the delay of the packets before releasing them.

With respect to claims 15 and 17, applicant claims "a predefined value" in claim 15 and "a maximum value" in claim 17. Both claims are dependent upon claim 11, which does not define either of the values. However, in claim 14 applicant claims "a maximum permissible value (CPTMAXn)". Examiner assumes that "a predefined value" and "a maximum value" are the same as "a maximum permissible value (CPTMAXn)."

Furthermore, with respect to claim 17, applicant claims "a step of producing and sending an alarm." However, it is not apparent from the claim language who is the intended receiver of the claimed alarm.

With respect to claim 20, applicant claims "a telecommunication system adapted to process data traffic." The applicant, however, fails to sufficiently define how such system needs to be adapted in order to employ the claimed invention.

9.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 20 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the

enablement requirement. The claim contains subject matter which was not described in the

specification in such a way as to enable one skilled in the art to which it pertains, or with which

it is most nearly connected, to make and/or use the invention.

Claim 20 is a single means claim. The single means claim, i.e., where a means recitation

does not appear in combination with another recited element of means, is subject to an undue

breadth rejection under 35 U.S.C. 112, first paragraph. In re Hyatt, 708 F.2d 712, 714-715, 218

USPQ 195, 197 (Fed. Cir. 1983) (A single means claim which covered every conceivable means

for achieving the stated purpose was held nonenabling for the scope of the claim because the

specification disclosed at most only those means known to the inventor.). When claims depend

on a recited property, a fact situation comparable to Hyatt is possible, where the claim covers

every conceivable structure (means) for achieving the stated property (result) while the

specification discloses at most only those known to the inventor.

Claim Rejections - 35 USC § 101

4.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or
> any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and
> requirements of this title.

Claims 21-22 are rejected under 35 U.S.C. 101 because the claimed invention is directed

to non-statutory subject matter.

Claim 21 recites "a computer program" which is clearly a functional descriptive

material, software, per se. When recorded on some computer-readable medium it becomes

structurally and functionally interrelated to the medium and will be statutory in most cases since

use of technology permits the function of the descriptive material to be realized. However, the claim language lacks the necessary computer readable storage medium, and as such fails to fall within one of four statutory categories of invention according to 35 U.S.C. 101. Therefore, claim 21 is non-statutory.

With respect to claim 22, it is rejected as being dependent upon rejected claim 21.

5.   Claim 11 is rejected under 35 U.S.C. 101 because it fails to produce a real-world result. Claim 11 relates to a method of preventing illegitimate use of a network protocol, however the claimed method does not produce a real-world result that is useful, tangible, and concrete.

In determining whether the claim is for a "practical application," the focus is not on whether the steps taken to achieve a particular result are useful, tangible, and concrete, but rather that the <u>final result achieved</u> by the claimed invention is "useful, tangible, and concrete." In the instant application claim 11, the mere calculating a delay and forwarding packets of said stream after said delay do not produce a "useful, tangible, and concrete" result of preventing the illegitimate use of a network protocol, and the applicant has not claimed a <u>final result</u> that is "useful, tangible, and concrete" outside of the method its self.

Claim Rejections - 35 USC § 102

6.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

7.   Claim 11, and 19-22 are rejected under 35 U.S.C. 102(a) as being anticipated by

Williamson, "Throttling Viruses: Restricting propagation to defeat malicious mobile code",

Practical Solutions to Real Security Problems 2002 Conference, December 9, 2002.

With respect to claim 11, Williamson teaches the limitations of "calculating a delay that

is an increasing function of the bit rate of a stream coming from a machine" and "forwarding

packets of said stream after said delay" (page 1, column 2, paragraph 2 from the top) as a filter

on the network stack that uses a series of timeouts to restrict the rate of connections to new hosts

such that most natural traffic is un-affected. Any traffic which attempts to connections at higher

rate is delayed. The delays introduced by the timeouts are such that false positives are tolerated

with small delays, but malicious traffic is heavily penalized.

With respect to claim 19, Williamson teaches the limitation of "a device for processing a

stream of data packets coming from a machine, wherein the device comprises delay means for

delaying forwarding of the stream coming from said machine by a delay that is an increasing

function of the bit rate of said stream" (page 1, column 2, paragraph 2 from the top) as a filter on

the network stack that uses a series of timeouts to restrict the rate of connections to new hosts

such that most natural traffic is un-affected. Any traffic which attempts to connections at higher

rate is delayed. The delays introduced by the timeouts are such that false positives are tolerated

with small delays, but malicious traffic is heavily penalized.

With respect to claim 20, Williamson teaches the limitation of "a telecommunications system adapted to process data traffic comprising at least one stream of data packets coming from a machine, wherein the system comprises delay means for delaying forwarding of at least one stream coming from said machine by a delay that is an increasing function of said bit rate" (page 1, column 2, paragraph 2 from the top) as a filter on the network stack that uses a series of timeouts to restrict the rate of connections to new hosts such that most natural traffic is un-affected. Any traffic which attempts to connections at higher rate is delayed. The delays introduced by the timeouts are such that false positives are tolerated with small delays, but malicious traffic is heavily penalized.

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9.   Claims 12-18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Williamson, "Throttling Viruses: Restricting propagation to defeat malicious mobile code", Practical Solutions to Real Security Problems 2002 Conference, December 9, 2002 in view of Belissent (WO 02/01834 A2) and further in view of Kaashoek et al. (US 2002/0035683 A1).

With respect to claim 12, it is noted that Williamson does not teach the limitation of "the delay function depends on the value of a count (CPTN) of data packets of said stream."

On the other hand, Belissent teaches (page 9, lines 6-11) that if, during the previous throttling interval, there are connections in excess of the slowdown threshold, then what is referred to as a wait time is used to delay the incoming connections request stream. In particular, the wait time is related to the number of connection request above the slowdown threshold as referred to as a slowdown rate.

It is further noted, that even though Belissent teaches the slowdown time being related to the number of detected connection request, he does not explicitly teach detecting the data packets.

However, Kaashoek teaches (page 5, paragraph 0056) that the monitoring process in the gateway can examine a ratio of incoming to outgoing TCP packets for a particular set of machines. The monitoring process can compare the ratio to a threshold value.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate teachings of Belissent and Kaashoek into the system of Williamson because it would provide a more robust method of throttling the traffic by making the delay dependent on the number of actual connection requests.

With respect to claim 13, examiner interprets the limitation of "the delay function has a positive second derivative" as the delay time is increasing with the increasing number of detected packets. In view of this interpretation, Williamson teaches the abovementioned limitation (page 3, column 1, paragraph 2 from the top) as if the attack rate is a lot greater than the allowed rate, then the delay queue will grow at roughly the attack rate, and the delay to the individual connections will grow as the queue lengths grow.

With respect to claim 14, Williamson teaches the limitation of "a step of determining a maximum permissible value (CPTMAXN) of the bit rate for the stream" (page 3, column 1, first paragraph from the top) as if the time between timeouts is d, then the system limits the rate of connection to new hosts $r_{allowed} = 1/d$.

It is noted that Williamson does not explicitly teach the limitation of "a step of destroying waiting data packets if the number of data packets that has arrived exceeds the maximum permissible value (CPTMAXN)."

On the other hand, Belissent teaches the abovementioned limitation (page 5, lines 8-10) as if the interval m connection request count is determined to be greater than a rejection threshold associated with the requesting client then the connection request is rejected.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate teachings of Belissent into the system of Williamson to prevent the malicious traffic from reaching the system.

With respect to claim 15, Williamson teaches the limitation of "a step of stopping the calculation of the delay for said stream if the count (CTPN) of packets is below a predefined value" (page 3, column 1, paragraph 5 from the top) as rates lower than $r_{allowed}$ are not affected.

With respect to claim 16, it is noted that neither of Williamson, Belissent, or Kaashoek explicitly teach the limitation of "the stream under surveillance is of the signaling protocol type."

On the other hand, examiner taken an official notice that signaling protocols like ISDN are well known in the art, and therefore it would have been obvious to one of the ordinary skill in the art at the time of the invention to apply the system of Williamson, Belissent, and Kaashoek to monitor such a protocol.

With respect to claim 17, Williamson teaches the limitation of "a step of detecting a change of the bit rate associated with said stream toward a maximum value and a maximum reduction of said bit rate toward a zero bit rate" (page 3, column 1, paragraph 5 from the top) as by monitoring the delay queue, rapid spreading behavior can be quickly detected and the offending program stopped.

It is noted, however, that Williamson does not explicitly teach the limitation of "a step of producing and sending an alarm."

On the other hand, Kaashoek teaches the abovementioned limitation (page 5, paragraph 0057) as the gateway divides network traffic into multiple buckets, e.g. by source network address, and tracks the ratio of ingoing to outgoing traffic for each bucket. As the ratio for one bucket becomes skewed, the gateway may subdivide that bucket to obtain more detailed view. The gateway raises a warning or alarm to the data center and/or to the administrator at the victim site.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate teachings of Kaashoek into the system of Williamson to provide a fast response to the ongoing attack by informing the involved personnel.

With respect to claim 18, Williamson teaches the limitations of "in a normal operation step during which the protocol is used as intended, the packet count retains a value less than a predetermined value and greater than or equal to 0", "in an abnormal operation step during which the system is subject to an attack, the count increases", and "in a subnormal operation step during which the system is used momentarily beyond its limits, the count retains a value less than a predefined value" (page 3, column 1, paragraph 5) as rates lower than $r_{allowed}$ are not affected. Furthermore, (page 3, column 1, paragraph 2) if the attack rate is a lot greater than the allowed rate, then the delay queue will grow at roughly the attack rate, and the delay to the individual connections will grow as the queue length grows. Finally, (page 3, column 1, paragraph 4) for low rates of attack the queue size and thus the delays grow slowly. This means that if a normal program has a brief period where it's rate is greater than allowed, there will be some delay, but the delays should be small.

With respect to claims 21 and 22, it is noted that Williamson does not explicitly teach the limitations of "a computer program including instructions for executing the steps of the method according to claim 11 when said program is executed on a computer" and "a processor adapted to execute the computer program according to claim 21."

On the other hand, Belissent teaches the abovementioned limitations as a computer readable media including computer program code for preventing a denial of service attack by a requesting client on a server computer. It is interpreted by examiner that the server computer comprises a processor to implement the instructions of the computer program.

It would have been obvious to one of the ordinary skill in the art at the time of the

invention to incorporate teachings of Belissent and Williamson to implement the method taught

by Williamson as a computer code to eliminate the expenses associated with the development of

the hardware system.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to KONSTANTIN SHEPELEV whose telephone number is

(571)270-5213. The examiner can normally be reached on Mon - Thu 8:30 - 18:00, Fri 8:30 -

17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Ayaz R. Sheikh can be reached on (571)272-3795. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Konstantin Shepelev/   10/22/2008
Examiner, Art Unit 2431
/Syed   Zia/
Primary Examiner, Art Unit 2431